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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/020,891	12/19/2001	Gee Sung Chae	8733,495.00	8845
30827	7590	05/02/2006	EXAMINER	
MCKENNA LONG & ALDRIDGE LLP			DUONG, THOI V	
1900 K STREET, NW			ART UNIT	
WASHINGTON, DC 20006			PAPER NUMBER	
			2871	

DATE MAILED: 05/02/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/020,891

Applicant(s)

CHAE, GEE SUNG

Examiner

Thoi V. Duong

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 13 February 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 18-41 ~~is~~are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 18-41 ~~is~~are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

### DETAILED ACTION

1. This office action is in response to the Amendment filed February 13, 2006.

Accordingly, claims 18 and 28 were amended, and claims 1-17 were cancelled.

Currently, claims 18-41 are pending in this application.

#### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 18-21, 23-29, 31-36 and 39-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 6,649,934 B2 to Song et al. (US'934) in view of USPN 5,990,986 to Song et al. (US'986) and USPN 6,577,368 B1 to Yuh et al. (Yuh).

Re claims 18 and 28, as shown in Figs. 10 and 11, US'934 discloses a liquid crystal display (LCD) as well as a method of fabricating the same comprising:

a gate electrode 26 formed on a substrate 10;

a gate insulating film 30 formed on an entire surface of the substrate;

a semiconductor layer 42 and an ohmic contact layer 55, 56 formed on the gate insulating film 30;

a pixel electrode 63 formed on the ohmic contact layer 56 (col. 12, lines 58-64);

a drain electrode 76 on the pixel electrode 63, the drain electrode 76 being connected with the pixel electrode 63 on the ohmic contact layer 56; and

a passivation layer 80 formed on the pixel electrode 63,

wherein, re claim 33, the drain electrode 76 is electrically connected to the pixel electrode 63; and

wherein an overlap of the drain electrode 76 and an end portion (right end portion) of the ohmic contact layer 56 is connected to the pixel electrode 63 as shown in Fig. 11.

US'934 also discloses that a common electrode that drives liquid crystal molecules along with the pixel electrode may be formed on the same substrate as the pixel electrode is (col. 16, line 57-59).

US'934 discloses a LCD device that is basically the same as that recited in claims 18 and 28 except for a buffer layer formed on the ohmic contact layer and a common electrode on the passivation layer substantially parallel to the pixel electrode.

At first, as shown in Fig. 3, US'986 discloses a liquid crystal display device comprising a buffer layer 51, 52 formed on an ohmic contact layer 41, 42 and a transparent conductive layer 61, 62 formed on the buffer layer 51, 52 (col. 3, lines 39-57).

Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method of US'934 with the teaching of US'986 by forming a buffer layer on the ohmic contact layer to obtain small contact resistance with the transparent conductive layer and increase wiring reliability (col. 1, lines 52-55, col. 3, lines 46-50 and col. 4, lines 1-11).

Further, as shown in Figs. 1 and 2, Yuh discloses an in-plane switching mode LCD device comprising a pixel electrode 2, a passivation 3 formed on the pixel

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electrode 2, and a common electrode 1 formed on the passivation layer 3 (col. 6, lines 45-55), wherein the common electrode 1 is substantially parallel to the pixel electrode 2 since they are equally spaced and formed only along the longitudinal direction and the traverse direction (col. 6, lines 48-58).

Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the LCD device of US'934 with the teaching of Yuh by forming a common electrode on the passivation layer substantially parallel to the pixel electrode so as to obtain a wide viewing angle, reduce power consumption and enlarge the aperture ratio (col. 3, lines 3-8).

Re claims 19, 20 and 29, US'934 discloses that the gate electrode 26 includes aluminum (Al), which is a low resistance material (col. 8, lines 35-48).

Re claims 23, 24 and 31, US'934 discloses that the source and drain electrodes 75, 76 include aluminum (Al), which is a low resistance material (col. 9, lines 11-21),

Re claims 25, 26 and 32, US'934 discloses that the pixel electrode 63 includes indium tin oxide, which is a transparent conductive material (col. 9, lines 11-21).

Re claims 35 and 36, US'934 discloses that the gate electrode 26 is deposited by a sputtering process and patterned using photolithography (col. 13, lines 45-51).

Re claims 39 and 40, US'934 discloses that the pixel electrode 63 is patterned by a sputtering process (col. 16, lines 23-26).

Re claim 41, US'934 discloses that the passivation layer is formed by a deposition process (col. 16, lines 34-36).

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Re claim 21, US'986 discloses that the buffer layer 51,52 includes a metal (col. 3, lines 40-43).

Finally, re claims 27 and 34, Yuh discloses that the common electrode 1 includes a transparent conductive material such as indium tin oxide (col. 6, lines 45-55).

4. Claims 22, 30, 37 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 6,649,934 B2 to Song et al. (US'934) in view of USPN 5,990,986 to Song et al. (US'986) and USPN 6,577,368 B1 to Yuh et al. (Yuh) as applied to claims 18-21, 23-29, 31-36 and 39-41 and further in view of (USPN 6,529,251 B2) to Hibino et al. (Hibino).

The LCD device of US'934 as modified in view of US'986 and Yuh above includes all that is recited in claims 22, 30, 37 and 38 except for forming the buffer layer of Titanium (Ti) and patterning the semiconductor layer, the ohmic contact layer, and the buffer layer 20 on the gate insulating film by a plasma chemical vapor deposition process.

Re claims 37 and 38, as shown in Fig. 4(c), Hibino discloses a method for manufacturing a LCD device comprising patterning a semiconductor layer 17, an ohmic contact layer 18, and a buffer layer 20 on a gate insulating film 16 by a plasma chemical vapor deposition process (col. 7, lines 11-33),

wherein, re claims 22 and 30, the buffer layer 34 includes titanium (col. 6, lines 9-12).

Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the LCD device of US'934 with the

teaching of Hibino by forming a buffer layer of titanium so as to serve as a barrier layer against liquid agents and protect the gate electrode from erosion (col. 7, lines 35-45).

***Response to Arguments***

5. Applicant's arguments filed August 01, 2005 have been fully considered but they are not persuasive.

Applicant argued that Song "934", Song "986", Yuh and Hibino fail to teach an in-plane switching mode LCD device that includes, "source or drain electrodes on the pixel electrode, the source or drain electrodes being connected with the pixel electrode at an overlap of the source or drain electrodes and an end portion of the buffer layer."

The Examiner disagrees with Applicant's remarks.

At first, as shown in Fig. 11, Song "934" discloses an in-plane switching mode LCD device (col. 16, lines 55-59) comprising a pixel electrode 63 formed on an ohmic contact layer 56 and a drain electrode 76 formed on the pixel electrode 63. since the ohmic contact layer 56 is completely overlapped by the pixel electrode 63 and the drain electrode 76, the drain electrode 76 is also connected with the pixel electrode 63 at an overlap of the drain electrode 76 and a right end portion of the ohmic contact layer 56.

Further, as shown in Fig. 3, Song "986" is employed for teaching a buffer layer 51 formed along an ohmic contact layer 41 in order to reduce contact resistance between transparent electrodes and a semiconductor film, and increasing wiring reliability (col. 1, lines 52-55 and col. 4, lines 1-11). Accordingly, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method of US'934 with the teaching of US'986 by forming a buffer layer on the ohmic contact

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layer to reduce contact resistance between transparent electrodes and a semiconductor film, and increasing wiring reliability.

Since the right end portion of the ohmic contact layer 41 and that the buffer layer coincide as shown in Fig. 3, with the modification, it is obvious that an overlap of the drain electrode and an end portion of the ohmic contact layer is also an overlap of the drain electrode and an end portion of the buffer layer.

Furthermore, as shown in Figs. 1 and 2, Yuh discloses an in-plane switching mode LCD device comprising a pixel electrode 2, a passivation layer 3 formed on the pixel electrode and a common electrode 1 formed on the passivation layer. Thus, it is obvious to one skilled in the art to apply the structure of Yuh to the in-plane switching mode LCD device of Song "934" in order to obtain a wide viewing angle, to reduce power consumption and to enlarge the aperture ratio (col. 3, lines 2-7).

Finally, Hibino is employed for teaching a buffer layer including titanium in order to serve as a barrier layer and protect the gate electrode from erosion.

Thus, a prima facie of obviousness has been established by combining or modifying the teachings of the prior art to produce the claimed invention.

### ***Conclusion***

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not



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mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

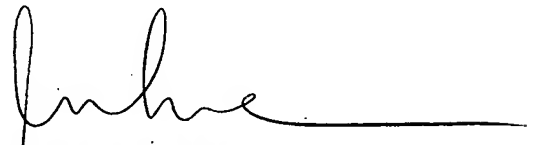
7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thoi V. Duong whose telephone number is (571) 272-2292. The examiner can normally be reached on Monday-Friday from 8:30 am to 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim, can be reached at (571) 272-2293.

Thoi Duong



04/26/2006



DUNG T. NGUYEN  
PRIMARY EXAMINER